MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK•EASTERN SHORE

Homework Program

HW4

Water Conservation in the Home

Do you ignore dripping faucets, let the water run while you brush your teeth, or run a half-filled dishwasher? Practicing wise water use methods in your home can benefit you and your community. In addition to using less ground and surface water, you lower your need for wastewater disposal and help improve water quality in the environment.

If a municipal system supplies your water and treats your wastewater, conserving water means that you are using less treated water as well as producing less wastewater for the sewage treatment plant to handle. Many communities cannot afford to remove most of the contaminants in wastewater. As a result, existing levels of treatment pass many contaminants into natural water bodies. Reduced water consumption, therefore, means less wastewater is generated and water pollution is reduced.

If you have your own water supply and wastewater treatment system at home, you can save energy by pumping less water and reduce septic tank and drainage field requirements by disposing of less water.

Do you know how much water you use per day? A typical consumer uses from 50 to 75 gallons daily. If you get a bill for water consumption from a municipality, check how much you and your family use in a month. Calculate the average usage per person, per day for your home. Is the amount more or less than 50 gallons? Can you reduce the amount of water you and your family use daily?

Increase your awareness of your water use practices in the bathroom, kitchen, and laundry. You could save money as well as water.

Personal Care

The amount of water used in the bathroom exceeds all other household uses. You can significantly reduce water used in the bathroom by changing your habits.

- Take short showers instead of baths. With a flow control device in your shower arm or head, a 4-minute shower uses only 8 gallons of water. Baths can use 30 to 50 gallons of water.
- Relax with a massage or exercise rather than a shower massage.
- Take a sponge bath instead of a shower when feasible.
- Avoid running water in the shower while shampooing hair, soaping body, or shaving legs. A cut-off valve on the shower head temporarily stops water without altering the temperature.
- Keep the bath water level low.
- Avoid flushing the toilet unnecessarily. Each flush of a standard toilet uses 3.5 to 5 gallons of water.
- Dispose of tissues, insects, cigarettes, and other trash in a wastebasket rather than in the toilet.
- Do not let water run in the sink while shaving, brushing teeth, or lathering your face and hands.
- Turn faucets off tightly enough to avoid drips. Valve seats in faucets can be damaged if too much pressure is applied.
- Teach children to practice these water-saving techniques, and be a good role model for them.

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Laundry

The laundry is second to the bathroom in quantity of water used. Knowing the following conservation practices and understanding the options your washing machine offers will help decrease the amount of water you use in caring for clothes and household textiles.

- Launder full loads when possible.
- If you have less than a full load, use the water-level control on your washing machine if you have that option, but do not skimp. Too little water decreases washing effectiveness, and increases wrinkling and friction.
- Use the permanent press cycle sparingly; it can add an additional fill with cold water that can use an extra 10 to 20 gallons.
- Turn the water supply to your washer off when not in use in case a hose leaks or breaks, especially before going on a trip. Check the condition of hoses periodically and look for leaks.
- Avoid washing clothes unnecessarily. Wash clothes to remove soil, not wrinkles.
- Check labels on clothes you are considering buying to avoid those that require separate washings.
- Hand wash several items at the same time. Use the rinse water from one group of items as the wash water for the next.

Food Preparation

You can reduce the amount of water used for food preparation and often prevent nutrient loss as well. The following practices will save water:

- Cook food in as little water as possible.
- Avoid keeping water running when washing fruits and vegetables. Washing them in a bowl conserves water.
- Thaw frozen fruits and meats in the refrigerator or microwave rather than in running water.
- Limit use of garbage disposals because they require running water to operate. Much garbage can be added to the trash or compost pile. This practice also decreases the amount of nitrogen, phosphorus, and organic matter in the wastewater, helping to improve environmental water quality and prolonging the life of septic systems.
- Keep a covered bottle of water in the refrigerator to avoid running water at the faucet to get it cold for drinking. This also helps eliminate a chlorine taste and smell in treated water.
- Serve drinking water only if people request it.

Dishwashing

Although washing dishes by hand can use less water than an automatic dishwasher, the efficiency of a dishwasher in the removal of bacteria is so much greater than handwashing that if you have a dishwasher, you should use it. Minimize the amount of water used in cleaning dishes with the following practices:

- Wash only full loads in your dishwasher.
- Select the cycles that use the least number of washes and rinses. You can decrease the amount of water required from 16.5 to 7.5 gallons by choosing short-run cycles.
- Avoid unnecessary rinsing of dishes when loading the dishwasher. Wipe dishes with paper napkins or use a scraper to minimize rinsing.
- Use the rinse and hold cycle, which uses 3 gallons of water—less than rinsing under running water, but more than rinsing in a pan of water.
- Hand wash and rinse serving and cooking utensils that take up a lot of dishwasher space in pans of hot water. You might prefer to rinse dishes in a slow waterflow or a spray, but avoid letting the water run continuously while washing or rinsing. Wash soon after meals so that food does not harden on dishes and require more water.

Household Cleaning

- Clean sidewalks, patio, and driveway with a broom instead of a hose.
- Wash house windows and cars using a 50/50 solution of white vinegar and water. Rinse quickly with a hose using a high-pressure, low-volume, pistol grip nozzle. If you wash a car on the grass without using strong detergents, you also water the lawn instead of letting the water flow into the storm sewers.

- Clean spills on floors and carpets as they occur to avoid frequent floor mopping or carpet cleaning.
- Vacuum carpets regularly so you will not have to shampoo so often.

Plumbing

You can install water-saving devices to provide an inexpensive, cost-effective and lasting solution to water conservation.

- Pressure-reducing valves installed at the water service line of your house can lower water pressure in high-pressure service areas. The valves can reduce pressure to the 50-pounds-per-square-inch range.
- Shower heads with built-in flow control devices are available, or flow control devices can be installed in the shower arm.
- Aerators with built-in flow limiters that restrict the flow of water are available for kitchen, laundry, and bathroom faucets.
- A commercial water dam can be used to reduce the amount of water used in flushing a toilet. Follow manufacturer's instructions for installation and use. Weighted plastic bottles are sometimes recommended for the same purpose, however, special precautions must be taken to ensure safe use.
- Check how frequently your home water softener backwashes. How many gallons of water are used for the regeneration process? The amount could be 100 gallons. Is the regeneration cycle too frequent, wasting water and salt, and adding contaminants to wastewater? Once a week cycling is usually more than enough for a family of four. You might want to run unsoftened water lines to the toilet and outdoor faucets to reduce the use of the softener. An extra line to supply unsoftened water to the kitchen sink can be attached where a spray normally connects, providing untreated water for drinking, cooking, and other uses.

Table 1 compares the water use of these water-saving devices to standard plumbing. Various agencies have rated all of these water-saving devices as cost effective. You can also run some checks and take certain precautions to reduce the amount of water used in your home:

- Look for faucets that drip. Constant drips waste many gallons of water each day.
- Check for toilets that run continuously or have a slow leak. You can test for leakage by adding food coloring to the water in the tank. Wait 20 to 30 minutes and look for signs of the color showing up in the toilet bowl. The food coloring should not discolor the toilet bowl, but if it does, scouring the bowl and adding 2 tablespoons of chlorine bleach will remove the color. You also can cut off the water to the tank, note the water level, and check it several hours later.
- You can check for water loss by reading your water meter while no water is being used in your house. After several hours, the dial will not have changed if you have no leaks or drips. This also helps detect underground service leaks between the meter and your house.
- If you insulate hot water pipes, you will reduce the amount of water that must be run to get hot water to a faucet. This action also saves energy. Hot water use consumes the most residential energy other than home heating and cooling.
- Before you go on a trip, cut off the water and the hot water heater. This will prevent water loss and potential water damage if a pipe or hose breaks or if someone turns on an outside faucet in your absence. Turning off the hot water

Table 1. Water use comparison of standard and water-saving devices.

	Pressure reducing valve	Faucets with aerators	Shower	Tank toilet
Standard	80 lb/in^2	4 gal/min	3 gal/min	3.5 gal/flush
Watersaving	50 lb/in^2	2 gal/min	2.5 gal/min	1.6 gal/flush

heater protects it when the water is turned off and saves energy.

If you are planning to build a new house, or remodel a kitchen or bathroom, you can do several things that will conserve water in your home:

- Install low-flow toilets, faucets, and showers. Maryland's plumbing code requires this. Investigate different designs that are available.
- Install pressure-reducing valves when line pressure exceeds 50 pounds per square inch.
- Install the water heater near the kitchen, laundry, and baths. Consider two water heaters if faucets and appliances are not close.
- Insulate hot water lines.

Emergency Measures

Critical water shortages demand better water use management. In addition to the practices discussed above, the following precautions will also reduce home water consumption:

- Use fewer utensils in food preparation and fewer dishes, glassware, and flatware at meals.
- Prevent children from playing with water.
- Flush the toilet only when necessary. This practice saves a lot of water, but the following possibilities might be better solutions for you in emergencies.

"Gray" water from the rinse cycles of a washing machine, from rinsing produce, and from bathing and showering can be used to flush toilets, water outdoor plants, mop floors, and do other cleaning tasks. Several precautions need to be observed:

- Pour gray water into the toilet bowl for flushing, never into the tank because the water pressure in your house might decrease in a period of water shortage, siphoning the gray water into the fresh water supply.
- Gray water should not be kept for longer than 1 day. The addition of 2 tablespoons of chlorine bleach per gallon of water will extend the period a little longer, but try to use gray water the day you collect it or the bacteria count gets too high and odors will be objectionable.
- Gray water containing bleach or borax can damage plants.

If you are building a house in an area with fresh water supply problems, consider a plumbing system that allows gray water to be held in a special tank for flushing or to be integrated into outdoor trickle irrigation systems.

You can make a difference in the amount of water that is used and wastewater that requires disposal or treatment. Adopt some of these methods and encourage others to do so. Conservation of water benefits you and your community.

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